

Two New species of *Amphidromus* (Gastropoda: Camaenidae) from Cambodia & Laos

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ABSTRACT Two new species of genus *Amphidromus* Albers, 1850 are described from Cambodia and Laos and compared to four other species of this genus: *Amphidromus koenigi* Thach & Huber, 2018, *Amphidromus cognatus* Fulton, 1907, *Amphidromus stungtrengensis* Thach & Huber, 2018 and *Amphidromus thachi* Huber, 2015.

KEYWORDS Gastropoda, Helicoidea, Camaenidae, *Amphidromus*, Kratié, Cambodia, Attapeu, Laos, new taxon.

INTRODUCTION

Amphidromus is a genus of the family Camaenidae with many species collected in Cambodia and Laos. In the summer of 2018, specimens of what appeared to be two new species of this genus were collected. These specimens were not listed in the works by Parkinson, Hemmen & Groh (1987), Abbott (1989), Dharma (2005), Stanisic, Shea, Potter & Griffiths (2010), Schileyko (2011), Tan *et al.* (2011), Parsons (2014), Raheem *et al.*, 2014, Inkhavilay, Sutcharit & Panha (2017), Lok & Tan (2018), or Thach (2005, 2007, 2012, 2016, 2017, 2018). In this article, the taxa found on this expedition in the summer of 2018 are described as new to science.

SH	Shell height
SW	Shell width
BH	Body whorl height
AH	Aperture height

SYSTEMATICS

Class Gastropoda Cuvier, 1797
Superfamily Helicoidea Rafinesque, 1815
Family Camaenidae Pilsbry, 1895
Subfamily Camaeninae Pilsbry & Olsson, 1954
Genus *Amphidromus* Albers, 1850
Type species of genus: *Helix perversus* Linnaeus, 1758

Amphidromus laii Thach, 2019
new species
(Figures 1-8)

Abbreviations.

FMNH	Field Museum of Natural History, Chicago, USA
NMHN	National Museum of Natural History, Paris, France
NHMUK	Natural History Museum, London, UK
NNT	Collection Dr. Thach

Description. Shell small for the genus (measuring in average height between 19.9 mm and 23.9 mm), elongate tapering in shape with width 52.3% of height (see Table 1). Spire moderately tall, sutures deep. Body whorl inflated and measuring about 66.5 % shell height, periphery rounded. Outer surface

ornamented with many multicolored spiral bands and intermittent axial stripes at spire whorls. Sculpture consists of weak axial striae and conspicuous subsutural ribs (marked by “s” in Figures 2, 5). Aperture wide with external pattern visible within, occupying 46.8% of the shell height, outer lip translucent, slightly reflected, regularly convex with posterior end strongly turned rightward. Umbilicus slightly open, columella also translucent, curved and bordered by dark purple band followed by a black band. Background color yellow with black apex and spiral bands, carmine red subsutural bands, brown axial stripes and turmeric yellow bands at mid-whorls.

Type material. HOLOTYPE 19.9 mm high (Figures 1, 4, 5a, 8) in FMNH with Registration No: FMNH 386361.

Other Material Examined. Paratypes: all from type locality, Paratype 1, 22.9 mm (Figures 3, 5b) and Paratype 2: 22.1 mm (Figure 2) in NNT, Paratype 3: 22.0 mm (Figure 6), Paratype 4: 21.7 mm (Figure 7) and Paratype 5: 23.9 mm (not illustrated).

Type Locality. Kratié, Northeastern Cambodia.

Habitat. Among leaf litter.

Etymology. This new species is named after Huỳnh Lai of Vietnam for providing the type material.

Discussion. The new species is close to *Amphidromus koenigi* Thach & Huber, 2018 (Figure 9, 10) as it presents with black spiral bands at base, carmine red bands below the sutures and aperture with external pattern visible within, but differs mainly in its smaller adult size, not having a red outer lip and columella, and in the presence of conspicuous subsutural ribs and axial stripes at the spire whorls. *Amphidromus cognatus* Fulton, 1907 (Figures 11 & 12) resembles the new species in having a yellow background color and black spiral bands at base, but differs mainly in not having a translucent outer lip and columella, not having carmine red bands below sutures, and a more inflated body whorl with constricted sutures and absence of axial stripes at the spire.

No.	1	2	3	4	5	6
SH (mm)	19.9	22.9	22.1	22.0	21.7	23.9
SW (mm)	10.7	11.7	11.5	11.2	11.6	12.7
SW/SH	0.54	0.51	0.52	0.51	0.53	0.53
Mean SW/SH	0.52					
BH (mm)	13.6	14.7	14.8	14.2	14.6	16.2
BH/SH	0.68	0.64	0.67	0.65	0.67	0.68
Mean BH/SH	0.67					
AH (mm)	9.4	10.6	10.3	9.8	10.5	11.4
AH/SH	0.47	0.46	0.47	0.45	0.48	0.48
Mean AH/SH	0.47					

Table 1. Morphometrics of *Amphidromus laii* Thach, 2019.

Diagnosis. The new species is characterized by small adult size, translucent outer lip and columella, elevated subsutural ribs and turmeric yellow spiral bands at mid-whorls.

Amphidromus donchani Thach, 2019

new species
(Figures 13-20)

Description. Shell medium-sized for the genus (measuring in average height between 25.5 mm and 35.5 mm), elongate tapering in shape with width 54.2% of height (see Table 2). Spire tall, sutures deep. Body whorl inflated and measuring about 69% shell height, periphery rounded. Outer surface ornamented with broad axial stripes that are usually faint or lacking at body whorl and strongly curved at spire whorls. Dark-colored varix seldom present. Sculpture consists of weak axial striae and whitish subsutural bands. Aperture elongate and occupying 49.2% of the shell height without external pattern visible within, outer lip highly calloused. Umbilicus closed, columella slightly curved and also highly calloused. Color brown with white apex, black outer lip and columella.

No.	1	2	3	4	5	6
SH (mm)	35.5	25.5	29.0	29.5	34.9	35.0
SW (mm)	19.0	14.8	15.8	15.4	19.2	18.2
SW/SH	0.54	0.58	0.54	0.52	0.55	0.52
Mean SW/SH	0.54					
BH (mm)	24.0	17.4	20.5	20.4	24.5	23.7
BH/SH	0.68	0.68	0.71	0.69	0.70	0.68
Mean BH/SH	0.69					
AH (mm)	17.4	12.7	14.4	14.5	17.5	16.5
AH/SH	0.49	0.50	0.50	0.49	0.50	0.47
Mean AH/SH	0.49					

Table 2. Morphometrics of *Amphidromus donchani* Thach, 2019.

Diagnosis. The new species is readily recognized by black outer lip and columella, brown aperture, purple red parietal wall and presence of broad axial stripes, especially at spire.

Type material. HOLOTYPE 35.5mm in MNHN (Figures 13, 14, 18, & 20b) with Registration No: NMHN IM-2000-34202.

Other Material Examined. Paratypes: all from type locality, Paratype 1, 25.5 mm (Figure 15), Paratype 2: 29.0 mm (Figures 16, 17, & 19) and Paratype 3: 29.5 mm (Figure 20a) in NNT; Paratype 4: 34.9 mm and Paratype 5: 35.0 mm (not illustrated).

Type locality. Attapeu, South Laos.

Habitat: Around trees.

Etymology. This new species is named after Donald Chan of Hong Kong for his interest in studying land snails.

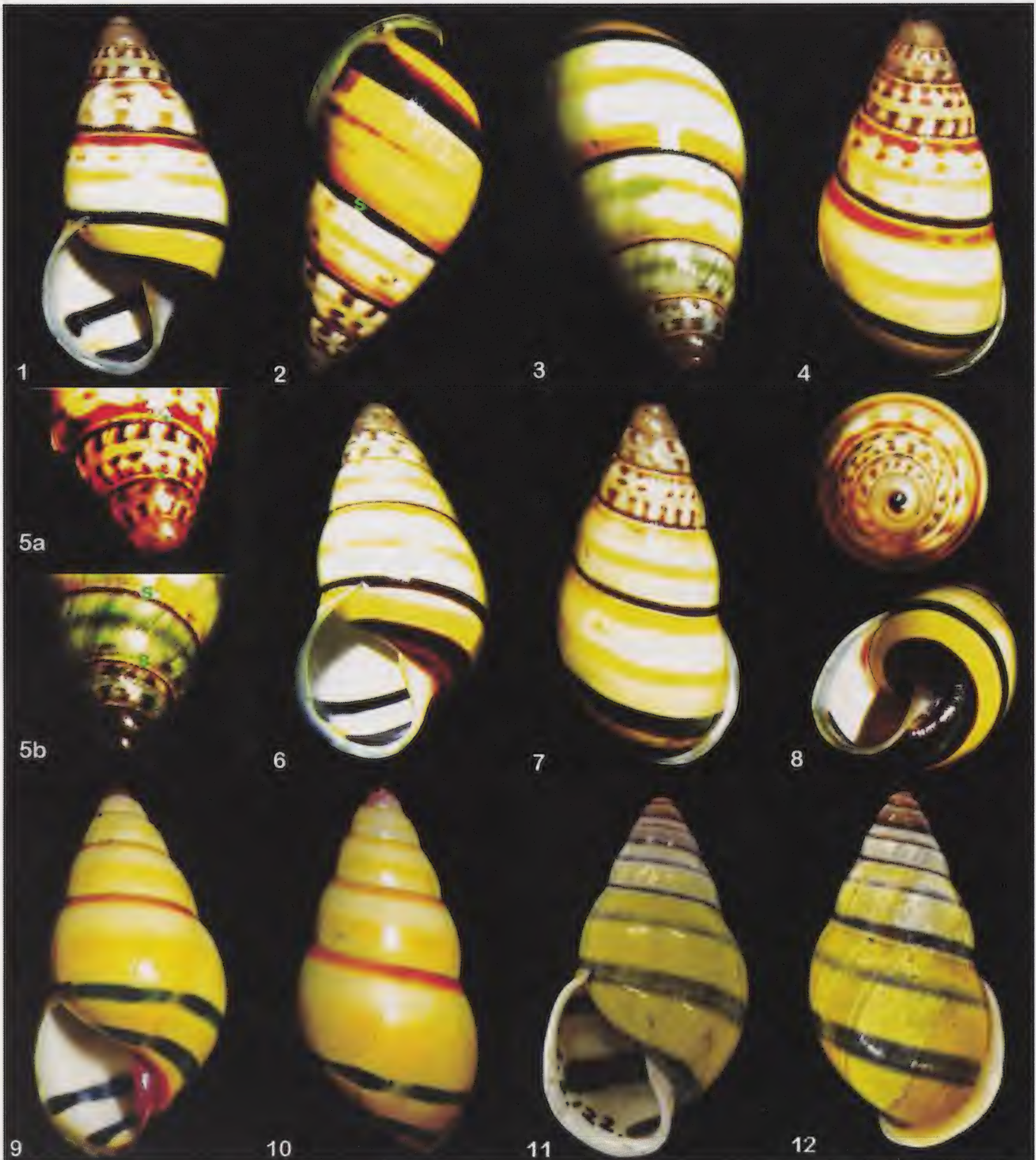
Discussion. The new species is close to *Amphidromus stungtrengensis* Thach & Huber, 2018 (Figures 21 & 22) as it presents with a black outer lip and columella, but differs mainly in having a brown aperture, not having a black apex, not having carmine red subsutural bands and not having a dark brown outer surface. *Amphidromus thachi* Huber, 1907 (Figures 23 & 24) resembles the new species in having a black outer lip and columella, but its outer surface is white (not brown), the anterior end of its outer lip is more pointed, and its columella is longer and more curved, its parietal wall is not purple red, its aperture is more deviated to the lateral sides and axial stripes are lacking.

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Figures 1-8: *Amphidromus laii* Thach, 2019, Kratié, Cambodia - 1: Holotype 19.9 mm with ventral view in FMNH - 2: Paratype 2, 29.0 mm with reflected outer lip in NNT - 3: Paratype 1, 25.5 mm with spire view in NNT - 4: Holotype with dorsal view - 5a: Holotype with enlarged subsutural bands - 5b: Paratype 1 with enlarged subsutural bands in NNT - 6: Paratype 3, 34.9 mm with ventral view - 7: Paratype 4, 29.5 mm with dorsal view - 8: Enlarged apex and umbilicus of holotype - 9, 10: *Amphidromus koenigi* Thach & Huber, 2018 for comparison, photo of Thach, 2018 - 11, 12: *Amphidromus cognatus* Fulton, 1907 for comparison, photo of NHMUK.



Figures. 13-20: *Amphidromus donchani* Thach, 2019, Attapeu, Laos - 13: Holotype 35.5 mm with ventral view in NMHN - 14: Holotype with with dorsal view - 15: Paratype 1, 25.5 mm with ventral view in NNT - 16: Paratype 2, 29 mm with dorsal view in NNT - 17: Paratype 2 with ventral view in NNT - 18: Holotype with reflected outer lip - 19: Paratype 2 with spire view - 20a: Paratype 3 with enlarged apex in NNT - 20b: Holotype with enlarged umbilicus - 21, 22: *Amphidromus stungtrensensis* Thach & Huber, 2018, 30.1 mm for comparison, photo of Thach, 2018 - 23, 24: *Amphidromus thachi* Huber, 2015, 33.3 mm for comparison, photo from Huber, 2015.